

# FACILITATION NETWORKS

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## CONTENTS

1. Summary	1
2. Metadata	1
2.1. Lebanon Site	1
3. Analyses	2
3.1. Lebanon Site	2

## 1. SUMMARY

The goal of this study is to investigate the effect of intraspecific variation on ecological interactions. Focusing mainly on the structure of facilitation networks at the individual level. Primary areas to explore are:

- (1) Linkage distributions
- (2) Nestedness
- (3) Connectedness
- (4) Modularity (use simulated annealing)
- (5) Comparisons across species and ecosystems
- (6) Comparisons between negative and positive interactions
- (7) Correlate linkage density with abundance of species and cushion characters
- (8) Unipartite networks to investigate relationships among individuals
- (9) Patterns explained by genetics:
  - Variance in node statistics by genotype
  - Clustering of genotypes by interactions
  - Centrality of individuals compared to clustering
- (10) Comparing antagonistic and mutualistic network structures (modularity vs. nestedness)

## 2. METADATA

**2.1. Lebanon Site.** Richard Michalet collected the data from two sites in Lebanon. *As-tragalus Zachalensis*

### 3. ANALYSES

#### 3.1. Lebanon Site.

- (1) Test for significance of each interaction using a binomial test
- (2) Construct the network using the RII (Response to Interaction Index)
- (3) Investigate (for whole and mutualistic-antagonistic interactions):
  - Node statistic for both facilitators and beneficiaries (e.g., edge density)
  - Nestedness and modularity
  - Relate facilitator node statistics to node qualities (e.g., cushion size, phylogeny)